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XVIII. *An Account of a Calculus from the Human Bladder of uncommon Magnitude.* By Sir James Earle, F. R. S.

Read June 15, 1809.

SIR WALTER OGILVIE, Bart. of Dundee, an officer in the regiment of Scotch Greys, at the age of twenty-three, active and healthy, was crossing the ferry at Leith, when he received a blow on his back, from the boom of the vessel, which paralyzed the pelvis and lower extremities. During two months he was obliged to have his water drawn off; for fourteen months he remained in bed, or in a horizontal posture, and though he then recovered the use of the bladder, and of his limbs, sufficiently to walk across the room with the help of crutches, and also to ride, when placed on an easy low horse, his health continued many years in a weak and precarious state, while the limbs acquired little additional strength or powers.

About twenty years after the accident, perceiving symptoms of stone in the bladder, he was examined by Mr. BENJAMIN BELL at Edinburgh, and a stone was felt, which was judged to have attained a considerable size; the operation of extraction was then recommended, but was postponed from time to time, though his health declined, and the irritation and pains in the bladder gradually increased.

SIR WALTER continued to endure this state of existence twenty-eight years from the time of the accident, when he

became unable to make water in an erect position ; this inconvenience increased to such a degree, that latterly he could make none without standing almost on his head, so as to cause the upper part of the bladder to become the lower, and this he was obliged to do frequently, sometimes every ten minutes, as the quantity at each time was less than the measure of a wine glass ; and when he used exercise, it was tinged with blood.

The principal remedies which had been prescribed for him were aqua calcis and uva ursi ; but he never persisted long in the use of either. At times, when the pain was violent, he had recourse to opium by the mouth and per anum : this, added to a naturally costive habit of body, rendered necessary the frequent assistance of aperients.

At the age of fifty-three, thirty years after the accident, the spasms and fits of pain, from the urgent desire to void urine, became so frequent and violent, and his life so completely miserable, that he was determined to have the stone extracted. I received a letter, requesting my opinion whether a paralytic state of the lower limbs was a prohibition to the operation of lithotomy ; on my reply to the contrary, he was put on board a ship and conveyed to the Thames, brought in a boat to Hungerford Stairs, and in an easy carriage to Hanover-street, without suffering any inconvenience of material consequence.

Toward the latter end of July, 1808, I visited him, when he gave me a clear and distinct account of what has been related, and added, that the stone could be evidently felt above the os pubis. At first, I much doubted of the large prominent tumor which I saw in the lower part of the belly, being a stone, but on attempting to pass the sound, it would not enter the bladder,

being stopped by a solid mass ; and on further examination, I was thoroughly convinced that there was a stone of sufficient size to fill the bladder.

He said he came to England with a determination to have it extracted, if it were possible, and desired my opinion as to its practicability. On such an extraordinary and important case I declined an immediate answer, but requested a consultation ; and Mr. CLINE was appointed to meet me. After mature consideration of every circumstance, we were of opinion that the possibility of extraction must depend on the consistence of the stone ; if it proved soft, as is well known to be frequently the case, it might be taken away ; but if too hard to be broken, it would be too large to be extracted whole, and must be left.

The operation of extracting it above the os pubis was thoroughly considered, and concluded to be uncertain and dangerous, because the bladder, thickened and exquisitely irritable, could not bear to be further distended with fluid, and the stone, although so large, had not raised it sufficiently high to obviate the danger of wounding the peritoneum, and penetrating into the cavity of the abdomen : the usual lateral operation was therefore judged to be the only safe and probable means to be attempted.

After some days consideration, Sir WALTER, thoroughly and perfectly aware of the difficulties which might reasonably be apprehended in the extraction, from the magnitude, and also from the uncertainty of the structure and consistence of the stone, determined to submit to the operation, and Mr. CLINE was requested to perform it.

On Thursday, August 11th, he was placed in the usual

situation, and the proper ligatures were applied; but it was soon found that the lower limbs were so incapable of action or resistance, that they were left unconfined. The staff could be passed in no farther than the neck of the bladder; the division of the urethra and prostate gland was made with the scalpel and probe-pointed bistouri: when this was accomplished, it was found impossible to introduce any kind of forceps; but on pressing hard with the finger, part of the stone felt soft, gave way, and made some room for the forceps, which brought away several portions, and with the assistance of a scoop, as much stone was extracted as would have filled a large tea-cup; but the great mass, beyond what the finger could reach on either side, still remained hard and impenetrable, and after repeated trials with forceps of different kinds, and of the strongest powers, it was found impossible farther to reduce the size of it, or take it away.

The patient bore the several attempts, and the necessarily protracted operation, with great firmness; probably, from the paralyzed state of the parts, the natural acuteness of sensation was blunted; however, as from weakness and fatigue he was becoming much exhausted, and the complete extraction appeared clearly out of our power, it was judged right to relinquish any further endeavours.

No hæmorrhage ensued, he became calm and composed, and passed a tolerably good night; the next day he complained only of the same kind of spasms, and frequent pressing desire to void urine that he had been accustomed to feel, and not in any very great degree more acute. As some proof of this, he was frequently inquiring when I thought the wound would be in a state to admit of the extraction of the remainder.

The second night passed nearly the same, without tension of the belly, the urine flowing through the wound, and some by the penis; the third day he complained much of the tenderness of the abdomen, which was tense and painful, and peritonitis seemed rapidly to be taking place, which, however, was lessened and quieted by bleeding and fomentations, and he again became easy: this state continued for several days, but he complained much of the frequent returns of his former spasms, after each of which a small quantity of urine was evacuated. He was nourished with broths, jellies, &c. but would take nothing solid, not even bread in any form; after the fifth day, he ate a few oysters, some fish, or chicken, drank occasionally of porter, and his health and strength were improving; but though these favourable symptoms continued, with the abdomen soft and easy, so as to bear examination by the hand, and all inflammatory action was subsided, yet the repeated spasms continually broke his rest, and kept him in a constant state of irritation, obliging him to violent efforts in resisting them, and to get instantly on his knees, with his head low on the bed, to enable him to expel the urine; and one spasm frequently succeeding before the former had well subsided, kept his whole frame in continual agitation, to the greatest possible degree that nature could bear. All these sensations and occurrences were very similar to what he had experienced for several months before he left Scotland; and it was then the opinion of Mr. STEWART, a medical gentleman who accompanied Sir WALTER to England, that his complaints were increasing to such a degree, that it was scarcely possible for him to exist much longer. In his present situation, of course, such shocks and disturbances of the whole animal economy acted with

increased effect, in proportion as he became less capable of supporting them. Toward the eighth day from the operation, he was visibly growing weaker, his pulse smaller and quicker, his little inclination for food became less, and he was with difficulty prevailed on to take any ; some cordial medicines, however, in some degree revived him ; but on the ninth day he grew more impatient, feverish, and restless, and on the twenty-first of August, ten days after the operation, he desired not to be teased to take any thing more ; when, covering himself completely with the bed-clothes, he quietly resigned a most singularly miserable existence.

Examination after Death.

On opening the abdomen, the bladder was found much diseased and thickened, firmly embracing a stone of extraordinary magnitude, and appearing to be completely filled with it. On dividing the bladder from the os pubis backwards to the rectum, the stony mass was uncovered, which I attempted to take away with the largest forceps ; but it was impossible. It was then raised by getting the hand under it, with considerable difficulty, as the cohesion between the bladder and the stone was very strong, though there did not appear to be any diseased or distinct adhesions. When taken out, the form of the stone appeared to have been moulded by the bladder ; the lower part, having been confined by the bony pelvis, took the impression of that cavity, and was smaller than the upper part, which having been unrestricted in its growth, except by the soft parts, was larger, and projected so as to lie on the os pubis.

A large excavation had been made in the lower part, which

lay on the neck of the bladder, by the operation. The internal structure was thus exposed, in which appeared distinct stones or nuclei, now consolidated into one mass, disposed in layers.

The weight of the stone was forty-four ounces, or three pounds four ounces (apothecary's weight), the form of it elliptical, the periphery, on the longer axis, sixteen inches, on the shorter fourteen.

The kidneys were altered considerably in their texture, and their pelvis much enlarged, the left was pressed up higher than natural, and adhered firmly to the spleen. The right was attached to the ascending colon, and general adhesion had obtained between all the surrounding parts. The ureters were much increased in their dimensions and thickness, and were capable of containing a considerable quantity of fluid; they were in fact supplemental bladders, the real bladder having become nothing more than a painful and difficult conductor of urine, which trickled down in furrows formed by it on the superior surface of the stone. This clearly explained the cause which obliged the patient, when compelled to evacuate urine, to put himself in that posture which made the upper part of the bladder become the lower, by which means a relaxation or separation was allowed to take place between the bladder and the stone, so that the ureters had an opportunity of discharging their contents; when the body was erect, their mouths, or valvular openings, must of course have been closed, by the pressure of the abdominal viscera on the bladder against the stone.

His difficulty of voiding urine, appears to have gradually increased as the bladder became more and more filled with the stony matter, and the extremity of his distress did not come

on till the whole cavity was nearly choked up. From the appearances on the examination, it is more than probable that the mouths of the ureters would have been soon completely closed, when a total, and consequently fatal suppression of urine must have taken place.

The disease probably originated when the patient was obliged to continue such a length of time on his back, in which position the surface of the water only may be supposed to have been, as it were, decanted, and the bladder, seldom, if ever, completely emptied; thus in a constitution, perhaps naturally inclined to form concretions, the earthy particles subsided, and by attraction soon began to lay the rudiments of a stone, which was not felt above the brim of the pelvis till many years after, but from that time the gradual increase of it was perceptible to the patient, and his medical friends: from this circumstance, as well as the shape of it, the stone evidently appears to have commenced within the pelvis, and in the lowest part of the bladder.

The texture of it appeared different from the generality of calculi, and to contain more animal matter. In a short time it became highly putrid and offensive: after macerating a few hours in fresh water, the saline particles in its composition began to separate, large flakes separated from its surface, and I was convinced, that if the maceration had been continued, the whole of the outer part would have crumbled away; it was therefore suffered to dry, and the putrid effluvia gradually went off. As a proof that animal matter abounded, the calculus not having been protected from the flies, maggots were produced in it at the end of a fortnight, which were destroyed by washing it with spirits.

Dr. POWEL examined its chemical composition, and informs me, that it decidedly consists of the triple phosphat of ammonia and magnesia, with phosphat of lime, forming together the fusible calculus of Dr. WOLLASTON (Phil. Trans. 1797.) mixed with a certain portion of animal matter, which was separated and floated under a membrane-like form, on the solution of the salts in diluted acids. That this composition is demonstrable by all the usual relations to alkalies and diluted acids, and the precipitates from solutions in the latter, by ammonia, and also by its fusion into enamel under the blow-pipe, and that the general external character of the calculus establishes the same fact by its semi-transparent appearance, and regular prismatic crystals of the triple salt, discoverable by a magnifier, between the more compact layers.

The nuclei were examined solely with the blow-pipe, from a wish not to disturb so fine a specimen beyond what had been done by the operation. By this examination they were found less fusible than the general mass, and appeared to contain a larger proportion of phosphat of lime, for by admixture of a portion of triple phosphat of magnesia, taken from another part of the same calculus, they were rendered as fusible as the rest.

This calculus accords entirely with the description given by FOURCROY (Système de Connoissance Chimique), and confirms his farther observations on this species. “Ce sont aussi les concretions urinaires les plus volumineuses de toutes; elles ont depuis le grosseur d’une œuf jusqu’à une volume qui occupe toute la vessie, en la distendant même considérablement.” From this passage, it should seem that similar instances had occurred to Monsieur FOURCROY; but from my

own observation, and from all the information I have been able to collect, no calculus from the human bladder, of such magnitude, has been hitherto exhibited, or described, in this country.

JAMES EARLE.

Hanover Square, Dec. 26, 1808.

The annexed Plates are representations of its size and figure.

Plate XVI. shews the cavity which was made by the instruments.

It is preserved in the Museum of the Royal College of Surgeons in London.



Wm. Clift del.

J. Basire sc.

